

Community engagement activities improve retention, skills and career readiness of Geology undergraduate students at the University of Texas at El Paso: lesson learned in a Hispanic serving institute

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We are in the process of revising the geological sciences undergraduate curriculum at the University of Texas at El Paso (UTEP), to increase retention and graduation rates, and better prepare our students for future STEM careers. The new degree plan utilizes best practices in Earth science education, including research experience, quality mentoring, and professional training. A critical component, supported by US NSF's program Geoscience Opportunities for Leadership in Diversity (GOLD-EN), was a new, senior-level "Community Engagement" course, to emphasize the multidisciplinary approaches to Earth science and demonstrate collaboration and engagement with the local community. This course was offered in Fall 2024, team-taught by two faculty in collaboration with Frontera Land Alliance, a local organization who strives to protect—in perpetuity—natural open spaces, farms and ranches, watersheds, and wildlife of the northern Chihuahuan Desert. The project topics were selected based on the needs of Frontera Land Alliance and student research interests. Knowledge was introduced using a variety of constructivist methods beyond the traditional lecture format, such as inquiry-based learning, interactive and student-centered activities, and case study approaches. These methods, along with field trips and discussion with stakeholders, provide our students opportunities to think critically and integrate knowledge they already possess, make connections with real world topics, and work through problems logically. A total of 11 undergraduates and 8 graduate students were enrolled in the course, and pre- and post-surveys were used to assess the students' gains in technical and community skills, attitudes with community engagement, and overall experience with the course and the instructors. Collectively, the students in the course reported very positive experiences, and produced research plans to address our community partner's need. The evaluations showed great gains in students' knowledges in logical geology, specific technical skills, professional and soft skills, and students' confidence of interest in serving community stakeholders.